

In Situ Wake Vortex Encounter Detection and Reporting System, Phase I

Completed Technology Project (2009 - 2009)



Project Introduction

Wake vortices are a critical constraint to aircraft separation and therefore airport throughput, which is already at or near capacity at many major airports in the NAS. Improvements to current methods of spacing aircraft could significantly increase airport capacity, but there is currently limited awareness of wake encounters and information with which to assess spacing in real-time or to design new spacing schemes. AeroTech proposes to improve situational awareness of wake vortices and enhance the prediction of wake vortex transport and decay by developing an In Situ Wake Vortex Encounter Detection and Reporting System (VEDARS). The VEDARS will quantitatively detect wake encounters using flight data; downlink encounter reports in real-time to enhance ATC awareness and enable assessment of spacing schemes; and collect and report meteorological parameters from aircraft for use in wake transport and decay predictions. Additionally, the VEDARS software can process historical flight data to identify prior wake encounters and assess spacing for a given weather day at an airport. Phase I will develop and test the VEDARS methodology and algorithms, and perform a feasibility assessment. By the end of Phase II, the VEDARS will have been both ground and flight tested, and will be enhancing wake awareness.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Langley Research Center (LaRC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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| Organizations Performing Work | Role | Type | Location |
|---------------------------------|-------------------------|-------------|------------------------|
| ★ Langley Research Center(LaRC) | Lead Organization | NASA Center | Hampton, Virginia |
| Aerotech Research | Supporting Organization | Industry | Newport News, Virginia |

Primary U.S. Work Locations

Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
 - └ TX16.3 Traffic Management Concepts